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PROBLEMS REQUIRING CONSIDERATION IF PROVISIONS RELATING TO THE NAMING OF ORDERS AND HIGHER TAXONOMIC CATEGORIES ARE TO BE INCLUDED IN THE " RÈGLES " : AN APPEAL TO ZOOLOGISTS FOR ADVICE

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(For the decision by the Thirteenth International Congress of
Zoology that an investigation should be made in regard to
this subject, see 1950, *Bull. zool. Nomencl.* **4**: 386)

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Introductory

1. Introductory : The present paper is concerned with the problems which require to be considered if provisions relating to the naming of Orders and Higher Taxonomic Categories are to be inserted in the *Règles*. This is the third of the seven questions relating to the *Règles* which the Thirteenth International Congress of Zoology at its meeting held in Paris in 1948 considered required attention but which, in its opinion, needed further study before decisions were taken thereon ; that Congress accordingly requested me, as Secretary to the International Commission on Zoological Nomenclature, to confer on this subject with interested specialists with a view to the preparation of a comprehensive Report, with recommendations, for consideration by the Fourteenth International Congress of Zoology when it meets at Copenhagen in 1953.

2. In the interval which has elapsed since the Paris Congress, I have taken every opportunity that has offered to obtain the views of specialists on this subject and in this way I have collected a certain amount of valuable material. For the reasons explained in the introductory note to the present series of papers (1952, *Bull. zool. Nomencl.* **7** : 1-3), I consider that the stage has now been reached at which a general consultation is desirable, in order to elicit the widest possible expression of opinion from interested specialists as to the action which it is desirable should be taken by the Copenhagen Congress in 1953. For this purpose I have prepared the present paper in which I have set out the various problems which, as it seems to me, it will be necessary for the Copenhagen Congress to consider if, as contemplated by the Paris Congress, the naming of Orders and other Higher Taxonomic Categories is then to be brought within the scope of the *Règles* ; at the same time I have put forward various suggestions for consideration.

3. Limitations imposed by the historical background : The provision of means for regulating the names of Orders and higher taxonomic categories is one of extraordinary difficulty, for hitherto no attempt has been made either to apply the principle of priority to the names given to units belonging to these categories or to provide these concepts with a definite objective meaning by linking them for nomenclatorial purposes with a single organism to which in all circumstances the name applied to any given taxonomic unit belonging to these categories shall adhere. The present position is thus completely chaotic and can be compared only with the position which would exist in relation to generic names if workers were free both to disregard priority and also to vary the application of existing generic names without reference to the type species of the genera concerned. This extraordinary situation has led—and is still leading—to the utmost instability in the nomenclature of Orders and higher categories, authors, when bringing forward what they consider to be improved systems of classification, not hesitating to throw overboard Ordinal and Class names hallowed by long usage dating back in some cases even to Linnean days (as, for example, when a desirable revision of the fishes was accompanied by a wanton throwing away of the Class name “Pisces”). While the difficulties of importing order into this field are obviously very great, the need for so doing is equally obvious. Anyone attempting to obtain a general acquaintance with the relationships of the higher groupings in the Animal Kingdom is inevitably confronted with an extremely difficult

problem; any such student deserves every possible help and should be relieved of at least all those difficulties which are remediable. But in fact such a student is gravely hampered by the complete anarchy which exists in the terminology used for denoting the groupings which it is his task to study. Indeed, the utter disorder which reigns in this field of zoological nomenclature is much more than a serious handicap to the study of the structure of the Animal Kingdom; it is a grave reflection upon zoologists generally that they should have tolerated for so long a situation which is a reproach to the science which they follow.

4. General character of the nomenclatorial problem involved:

The nomenclatorial problems involved in the naming of Orders and higher taxonomic categories are essentially similar to those involved in the naming of families. In each case what is needed is a system which will provide a sufficient degree of stability for, and uniformity in, the names applied not to some entity possessing an objective existence of its own but to abstract concepts which for practical reasons it is convenient to recognise in the classification of the vast array of creatures which together constitute the Animal Kingdom. In approaching this problem, it will be useful therefore to do so by following paths parallel to those which it has been found necessary to tread when considering the question of the principles to be followed in the naming of families. We have to recognise however from the outset that the problem confronting us is much more difficult than that which arises in connection with family names, for defectives as are the provisions in the *Règles* relating to the naming of families, the fact that there are any rules on this subject and, in particular, that those rules are based upon the concept of a "type genus" has rescued family names from the abyss of confusion and inconsistencies into which the naming of the higher categories has been allowed to lapse. Moreover, as will be obvious, the problem involved in introducing some kind of order into the naming of Orders and higher categories has been gravely prejudiced by the fact that, whereas fifty years ago an effort was made (by the Berlin Congress of 1901) to regulate the naming of families, it is only now that, by direction of the Paris Congress of 1948, a corresponding effort is to be made in relation to the names of Orders and higher categories. Thus, in the present case, any scheme which may be devised will need to be weighted in favour of stability rather than uniformity, for an attempt to stress the latter at the expense of the former would inevitably lead to name-changing on a large scale which would be highly objectionable and would be unacceptable to the general body of zoologists. The most that can be hoped for at this late stage is therefore some system which will secure stability and uniformity in the names used for higher taxonomic groupings in particular sections of the Animal Kingdom, but which will not provide a uniform system of nomenclature applicable throughout the Animal Kingdom as a whole.

5. Content of an Order for nomenclatorial purposes: The first question which calls for attention in drawing up a plan for the regulation of the names of Orders is the means to be adopted for providing a fixed content for nomenclatorial purposes for each nominal Order dealt with. The problem here is exactly parallel to that which a hundred years or more ago zoologists had to face in order to provide a fixed content for each nominal genus. This

object was successfully achieved by the adoption of the type species concept, under which for nomenclatorial purposes one of the originally included species was fixed as the sole determining factor for the genus concerned; that species—and that species alone—belonged in all circumstances to the nominal genus in question; whether or not other species should also be referred to that genus was solely a matter of taxonomic judgment and one therefore which fell entirely outside the field of zoological nomenclature. At the present time nominal Orders are in exactly the same position as a nominal genus for which no species has been designated or selected as the type species; in each case the concept represented is indeterminate and, having no fixed foundation, is liable to be changed at any time in accordance with the shifting views of successive generations of taxonomists, there being no mechanism to ensure that at least some part of the group originally included in the nominal Order shall, in all circumstances, remain in that Order for nomenclatorial purposes. Quite clearly, no progress of any kind in the direction of securing stability in the names of Orders can be achieved until means are provided to overcome this fundamental defect. In other words, it is an essential preliminary that each nominal Order should be provided with a “type” which shall be irremovable from that Order and shall constitute the sole means by which that Order shall be identified. If in every Order the included genera were grouped into families, the natural course would be to provide that every nominal Order should have a “type family.” In many groups, however, there are well established Orders but taxonomic ideas in regard to the mutual relationships of the genera included in those Orders are not sufficiently understood for it to be possible as yet to subdivide those Orders into families, or at least there is not sufficient agreement among specialists to make it possible to regard as firmly established such families as have been recognised. In these circumstances there seem to me to be two possible ways of providing such an Order with the “type” which it must have if it is to represent an objectively determinate concept. First, it would be possible to provide (a) that every nominal Order shall have a type family or, in the default of families having been established in that Order, a type genus and (b) that, where a genus and not a family is selected to be the type of an Order that genus shall automatically become the type genus of the type family of that Order as soon as families are established within it. Second, it would be possible simply to provide (i) that every nominal Order must have a “type genus” and (ii) that the “type genus” of an Order shall also be the “type genus” of each successive nominotypical sub-unit (e.g. infra-Order, Sub-Order, etc.) into which the Order concerned may be divided. The question of the means to be adopted for providing nominal Orders and similar categories with “types” is one of exceptional difficulty. For reasons which will become apparent in due course, it will, I think, be convenient to defer until a later stage in the present paper the consideration of the rules to be adopted for the designation, indication or selection of “types” for nominal Orders and higher categories.

6. Terminations of Ordinal Names: The wide diversity of terminations currently in use for the names of Orders makes it quite clear that no uniform termination for Ordinal names throughout the Animal Kingdom can be established without inviting a widespread and most undesirable changing of

established names. It might however be possible to provide for uniformity within particular groups, where this was in accordance with the wishes of specialists in the groups concerned, for example, in the Class Aves where by general agreement the termination “-iformes” is adopted for Ordinal Names. If it were to be decided to provide for a limited measure of uniformity of this kind, it would be necessary to provide a standard by which to determine the area within the Animal Kingdom inside which any given uniform termination was to be used. This end could be attained in a number of different ways: For example, if it were decided to establish a uniform termination for Ordinal Names within a given Class, it would be possible to provide that the proposed uniform termination should be used for every Order regarded as belonging to the same Class as the Order which is the “type Order” of that Class. In many parts of the Animal Kingdom the ideas of systematists regarding the limits of Classes are, in the present state of knowledge, extremely fluid; it would be necessary therefore to consider what should be the position when an Order is removed on taxonomic grounds from the Class in which it has hitherto been placed. Should such an Order retain for its name the uniform termination which it had borne prior to its removal from the Class concerned or should it, on being removed from that Class be deprived of that termination for its name? This question will require careful consideration: the interests of stability would suggest that in such a case the name of the Order should remain unchanged; on the other hand, it might be felt that it would be misleading in such a case if an Order were to be permitted to retain, as the termination of its name, a termination prescribed for Orders belonging to a nominal Class to which the Order in question is no longer considered on taxonomic grounds to belong.

7. Relation of Ordinal Names to the names of other suprafamily taxonomic categories: In our consideration of the relation of the names of families to those of the subdivisions of families (i.e. subfamilies and tribes) (1952, *Bull. zool. Nomencl.* **7**: 85-86) we have seen that it is essential from a nomenclatorial point of view, to treat all these names as co-ordinate with one another, just as generic names and subgeneric names are already so treated. It is immediately evident that exactly similar considerations apply as between the names of Orders and the names of Sub-Orders and other minor divisions of Orders. It will be a matter for consideration whether the names of Orders should be treated as co-ordinate with those of Classes. The fluid state of taxonomic ideas in regard to many invertebrate groups suggests that this might be desirable, for, as systems of classification become more elaborated, there is a tendency to advance to the rank of Classes groups formerly regarded as constituting Orders; in consequence, extensive name-changing might be inevitable if the names of Orders and Classes were treated in entirely separate compartments. This subject is reverted to in paragraph 16 below.

8. Principles to be adopted in determining whether a given term was published as an Ordinal Name: It is probable that in the literature of the last hundred years there are few cases where it is doubtful, as regards any given term, whether or not it was published as an Ordinal Name. So far, therefore, as concerns names published in this period, there would from this point of view be no difficulty in determining whether or not the terms in question

should be accepted as having been published as the names of Orders or of nomenclatorially co-ordinate categories. When however we go back to the XVIIIth century and the first half of the XIXth century, the position is far otherwise, for many names now accepted as Ordinal Names were published during that period in circumstances which it would be very difficult to bring within any definition of what constitutes the publication of an Ordinal Name. It seems likely therefore that in this matter—as in many similar cases—it will be found convenient to adopt a twofold definition, the first, the more lenient, to apply to names published before a certain date, the second, more rigorous, to apply to names published after the date referred to above but prior to the date of the introduction of the new provisions. Finally, for names published after the introduction of the new scheme, it will certainly be essential to provide (on the analogy of Proviso (c) to Article 25 in relation to generic names) that it shall be a necessary condition for the availability of a new Ordinal Name that, at the time when it is first published, the type family (or, as suggested above, the type genus) of the Order so named shall be clearly designated or indicated.

9. Ordinal Names and the Law of Priority : Just as we have seen that it would be entirely impracticable to require that the names of all Orders should have a uniform termination (see paragraph 6 above), so also it seems to me that it would be out of the question to apply the principle of priority for the purpose of determining the relative status of all Ordinal Names, for many of the older and therefore best known Ordinal Names would fail to pass such a test ; in consequence, many such names would disappear under such a system, being replaced by names which, though technically older, have virtually never been used and are today entirely unknown to any but close students of the history of zoology. While the principle of priority would thus be entirely inappropriate for application to names published during (say) the first hundred years following the establishment of zoological nomenclature in 1758, it could probably be applied successfully—with occasional exceptions—to the literature of the last hundred years. As regards the future—that is, the period following the introduction into the *Règles* of provisions relating to the naming of Orders—the principle of priority would not only clearly be workable but would also be the most equitable system to adopt. Thus, as in other cases where in the past either new provisions have been added to the *Règles* or old provisions have been revised, we are faced here with a situation in which it seems likely that it will be necessary to apply different standards to old names from those to be applied to more recent names published before the introduction of the scheme and that altogether more rigorous provisions will be needed for names published after the date of the introduction of the scheme.

10. Emendation of Ordinal Names : It will be necessary for the scheme to contain provisions relating to the emendation of Ordinal Names, for there are many such names now in use, for which emendations have been published, of which some have been accepted, while others (equally justified on etymological and similar grounds) have been rejected. Similarly, the scheme will need to prescribe the extent (if any) to which Ordinal names published after the coming into operation of the proposed scheme are to be subject to emendation. The general principle which I have recommended should be adopted in relation to the emendation of generic names (and trivial names) (1952,

Bull. zool. Nomencl. **7**: 12-14), namely the need for restricting the scope within which emendations should be permissible, (a) because of the great decline among zoologists in knowledge of, and interest in, the Latin and Greek Languages, and (b) because of the much greater importance attached now than formerly to the avoidance of irritating and pointless changes in names, applies with equal force, as we have seen (1952, *Bull. zool. Nomencl.* **7**: 11-14) to family names. In this matter, as in others, there would be no advantage whatever in applying to the names of Orders principles different from those to be applied to family names. I accordingly recommend that the scheme relating to Ordinal and co-ordinate names should provide that the emendation of such names shall be subject to the same conditions and procedure as that (proposed to be) prescribed for family names (see 1952, *Bull. zool. Nomencl.* **7**: 67-70).

11. Question of the names to be given to the nominotypical sub-units of Orders and Higher Taxonomic Categories : Under the *Règles* as they exist today, the nominotypical sub-units of both nominal genera and nominal species—that is, the subgenus containing the type species of the genus in which that subgenus is comprised and the subspecies of a polytypic species on which the original description of the species itself was based—do not bear independent names of their own but have names which are tautonymous, in the first case, with the name of the genus concerned and, in the second case, with the trivial name of the species concerned. Although the *Règles* contain no provision on this subject in relation to the nominotypical subfamilies and the nominotypical tribes of families, the same principle is commonly accepted in relation to names of units belonging to these categories and it has been suggested in the present series of papers (1952, *Bull. zool. Nomencl.* **7**: 85-86) that valid force should be given to this practice. When however we come to consider the parallel problem presented by the names of Sub-Orders of Orders, we find an entirely different position, for here the normal, if not the universal, practice is for each Sub-Order to have a name of its own, quite independent of the name of the Order within which the Sub-Order is comprised. That this should be so is no matter for surprise, since up till now Orders have not possessed types (either type families or type genera) and in consequence there has never been till now such a concept as that of a nominotypical Sub-Order. In these circumstances, it is clear that the introduction of a rule that the name of the nominotypical Sub-Order of an Order should be tantonymous with, or even necessarily based upon the same word as the name of the Order concerned (being distinguished therefrom only by a difference in termination) would serve no useful purpose and, through the name-changing which it would involve, would indeed be open to strong objection. Similar considerations apply to the names of the nominotypical Sub-Classes of Classes and the nominotypical Sub-Phyla of Phyla.

12. Citation of the name of the author of, and the date of publication of, Ordinal Names : Until comparatively recent times, the names of Orders were normally cited without particulars of authorship and date of publication, but in recent years the tendency has been for authors to give these particulars—usually for the purpose of providing some indication of the grounds on which the authors concerned have adopted one name in preference

to some other name for the Order concerned. If the names of Orders are to be brought under regulation, this practice should be formally recognised by the *Règles* as being correct, for it will be essential that in general works covering a substantial area of the Animal Kingdom particulars should be given of the "types" (whether type families or type genera) of the Orders dealt with, just as today in all similar works dealing with nominal genera particulars are (or should be) given of the type species of the genera concerned.

13. Homonymy as between Ordinal Names : One of the most objectionable results of the present chaotic state of Ordinal nomenclature is the co-existence of homonymous Ordinal Names. A striking example is provided by the term "Decapoda" which is, and has long been, in use as the name of an extremely well-known Order in the Class Crustacea and also as the name of a very well-known Order in the Class Cephalopoda. While such a situation may not seriously disturb specialists whose interests are confined exclusively to one or other of the Orders concerned, it represents nevertheless a serious reflection upon the present system of nomenclature for the higher categories in the Animal Kingdom, being both utterly illogical and entirely indefensible; it constitutes a serious handicap to teachers of zoology and a totally unnecessary source of confusion for students. From every point of view, therefore, it must be an essential condition of any rationalisation of the nomenclature of Orders and higher groups that a stop should be put to homonymy as between Ordinal Names. On the other hand, a provision similar to that already laid down in relation to generic names and to the trivial names of species and subspecies would clearly not be appropriate in the case of Ordinal names, for there could be no assurance that, in the case of the Ordinal names concerned, a rule that the junior of any pair of homonyms must always be rejected in favour of the senior homonym would provide the desired result, for it might well be found that in some of the cases involved it is the junior homonym, rather than the senior homonym, which it is of outstanding importance should be preserved in the interests of stability as a whole. It appears to me, therefore, that in this matter the best course would be for the scheme to provide not a fixed rule but rather some flexible mechanism which will ensure that the solution adopted shall in each case be the one calculated to produce the highest degree of stability, while causing the least possible inconvenience to workers in whichever of the Orders concerned some change in the Ordinal name used has to be made in order to escape from the existing situation of homonymy between the Ordinal names in question. It is accordingly suggested that for the present purpose the scheme should provide (1) that, where a situation of homonymy is found to exist as between two Ordinal or other nomenclatorially co-ordinate names, each published prior to the introduction of the revised scheme, the question which of the names in question is to be rejected in favour of the other is to be referred to the International Commission on Zoological Nomenclature for decision, it being the duty of the Commission in any such case to give preference to the more widely known and generally used of the names concerned, but (2) that, where a situation of homonymy arises either (a) between two Ordinal or nomenclatorially co-ordinate names, of which one was published prior to, and the other subsequent to, the introduction of the revised scheme or (b) between any two such names, both of which were published after the

foregoing date, the later published of the two names concerned is to be rejected as a junior homonym of the earlier published name. It is further suggested that applications under (1) above should be subject to the same procedure as that which I have recommended should be adopted in the like case as respects family names, that is, that the Commission should be required, on receiving any such application, to give public notice of its receipt in like manner as though it were an application involving the possible use of its plenary powers.

14. Suggested insertion in the "Règles" of a provision for the purpose of determining whether any two Ordinal or other co-ordinate names consisting of very similar but not identical words are to be treated as homonyms of one another : In the rules relating to homonymy in Ordinal (and co-ordinate) names, as in the rules relating to homonymy in names belonging to any other category, it will be necessary to provide means for determining whether any two Ordinal or co-ordinate names consisting of very similar, but not identical, words are to be treated as being homonyms of one another. In this matter no difference of principle exists by which names belonging to the foregoing categories are distinguishable from the names of families. It is accordingly suggested, therefore, that the scheme relating to the naming of Orders and allied categories should contain a provision applying to such names the provisions in this matter (which I have recommended should be) applied to family names (see 1952, *Bull. zool. Nomencl.* **7** : 83-84).

15. Homonymy between Ordinal Names and Generic Names : The Thirteenth International Congress of Zoology (Paris, 1948) incorporated into the *Règles* a provision based upon the Commission's *Opinion* 102 that the Law of Homonymy does not apply as between the names of Orders and higher categories on the one hand and the names of genera on the other hand, adding however at the same time a *Recommandation* deprecating the selection as generic names or trivial names of words previously published as the names of taxonomic units belonging to Sub-Ordinal or higher categories (1950, *Bull. zool. Nomencl.* **4** : 164-165). It has however more recently been suggested that that words already published as the names of Orders or higher categories should not be regarded as available for use as generic names at least for genera in the Order concerned, because of the confusion which would inevitably arise if the same word were to be used to denote both a whole Order and also a single genus within that Order. A case in point has arisen lately in connection with the recently unearthed generic name *Xiphosura* Brünnich, 1771, the name of a nominal genus objectively identical with (because possessing the same type species as) the nominal genus *Limulus* Müller (O.F.), 1785 ; the genus *Xiphosura* Brünnich (= *Limulus* Müller) is referable to the Order Xiphosura (Class Merostomata), and very strong objection has been lodged by specialists to the co-existence of the term "Xiphosura" both as an Ordinal Name and as a generic name. Any provision dealing with this problem would need to be such that a new generic name could not invalidate an established Ordinal Name and also that a new Ordinal Name could not invalidate an established generic name.

16. Names of Classes and Phyla : Hitherto we have considered the question of introducing rules for governing the names of units belonging to categories above the family level mainly from the standpoint of the names of

Orders, but we have noted that for practical reasons it will be desirable that the names of Orders and Classes should be co-ordinate with one another. Broadly speaking, the considerations which apply to the names to be given to Orders apply also to the names to be given to Classes and Phyla and their respective sub-units. In particular, it will be essential that, like Orders, these higher categories should be provided with types, which presumably would normally be, in the first case, type Orders and, in the second case, type Classes, for, like a nominal Order, a nominal Class or a nominal Phylum remains indeterminate until it has been provided with a type, by means of which its content for nomenclatorial purposes can alone be defined. It would be a matter for consideration whether the names of Phyla should be made co-ordinate with those of Classes. The answer to be given to this question will naturally depend mainly upon the view taken as to whether or not it is desirable that, when a group not previously assigned to any given Phylum is on taxonomic grounds treated as itself constituting a Phylum separate from any hitherto recognised, the name of Class rank hitherto borne by the group concerned should be promoted (with its existing priority) to the rank of a Phylum name. In view of the growing practice by which such promotions are made, it seems desirable that the names of Classes and Phyla should be made co-ordinate with one another.

17. Co-existence of Ordinal and Class Names based upon the same word: There are numerous cases where Ordinal Names and Class (or Sub-Class) Names are based upon the same word, differing from one another only by some slight variation in the termination employed. Just as it has been represented (see paragraph 15 above) that serious and quite unnecessary confusion is liable to arise from the co-existence of Ordinal Names and Generic Names consisting of the same word, so also it has been strongly urged that unnecessary confusion is liable to arise where slight variants of the same word are used to denote Orders and Sub-Classes and Classes. The representations on this subject received from teachers of zoology and palaeontology will require to be given careful consideration when the plan for regulating the names of Orders and higher taxonomic categories comes to be drawn up. My own feeling is that on balance the disadvantages involved in a change of the present practice would outweigh the advantages. It will, no doubt, be agreed that, from the point of view of giving oral instruction to students, it may often be an inconvenience—and, in some cases, even confusing—that successive strata in the hierarchy of categories recognised in taxonomic zoology should bear names based upon the stem of the same word and should differ from one another only by some slight difference in the termination employed. On the other hand, it seems likely that the number of names which would need to be altered if a change such as that discussed above were to be made would be considerable—in which case the proposal would offend against the canon that nothing should be inserted in the *Règles* that is calculated to lead to unnecessary name-changing. Moreover, the principle of using the same word as the base of names belonging to successive taxonomic categories is already well-established in the case of the names of families, subfamilies and tribes and their type genera. This practice does not give rise to confusion for the categories of names concerned, and it is not obvious why it should give rise to such results if it were to be applied—as it is, in fact, now applied—to the names of Orders and higher categories.

18. Proposed establishment of an "Official List of the Names of Orders and Higher Taxonomic Categories in Zoology": For reasons similar to those already explained in connection with the suggested establishment of an *Official List of Family Names in Zoology* (see 1952, *Bull. zool. Nomencl.* **7** : 90-91), it will clearly be necessary to include in the scheme for regulating the names to be given to Orders and higher taxonomic categories a provision establishing an *Official List of the Names of Orders and Higher Taxonomic Categories in Zoology*. The scope of this *Official List* and the duties of the Commission in relation to it would be similar to those prescribed in relation to the *Official Lists* already in existence. Thus, every Ordinal or other name, if the oldest available for the Order or other category concerned, regarding which the Commission took a decision would automatically be placed upon the *Official List*, as also would be the name of any Order (or other category) the type genus of which was placed on the *Official List of Generic Names in Zoology*. As in the case of the other *Official Lists*, there would need to be a provision, under which, at the discretion of the Commission, a second Ordinal (or equivalent) name could be placed on the *Official List*, with a note that it was so placed for use by those workers who considered that its "type" was not referable to the same Order as the "type" of the Order having the older name which was also on the *Official List*. Names placed on this *Official List* would be given the same relative status as names placed on the other *Official Lists*. The entries to be made on the *Official List* now proposed would follow generally the pattern set by the existing *Lists* and would include the bibliographical reference to the name concerned, the name of the "type" (whatever category may be accepted for this purpose), with a reference to the place where the name of that "type" (e.g., whether a family or a genus) was first published and information in a prescribed form regarding the manner in which the "type" acquired that position, whether by original designation, by indication, or by subsequent selection (in this latter case the necessary bibliographical reference being added). It is suggested further that, as in the case of the proposed *Official List of Family Names*, any given Ordinal or co-ordinate name should be entered on the *Official List* in precisely the form in which it was originally published, irrespective of whether or not the name in question is currently used as a name for a unit belonging to the category for which it was originally published or for some higher or lower category within the group of categories, the names of which would be co-ordinate with one another under the scheme contemplated. The duties of the Commission in relation to the proposed *Official List* would be the same as those for the existing *Official Lists*, that is, that it would be its duty to maintain and develop it by every means in its power. Concurrently with the establishment of the proposed *Official List* there would, again following the precedent set by the Congress in other cases, need to be established an *Official Index of Rejected and Invalid Names of Orders and Higher Taxonomic Categories*, on which would be placed all Ordinal and co-ordinate names rejected by the Commission or found by it to be invalid. The *Official List* and the *Official Index* so established would, like those already in existence, be embodied in Schedules annexed to the *Règles*. It will be seen from the foregoing summary that the provisions suggested for the proposed *Official List* and for the corresponding *Official Index* conform very closely to those laid down for the *Official Lists* and *Official Indexes*

already established and are virtually identical with those suggested for the *Official List* and *Official Index*, the establishment of which has been recommended as part of the plan for placing the naming of families and subordinate suprageneric units on a satisfactory footing (see 1952, *Bull. zool. Nomencl.* 7: 90-93).

19. Alternative approaches to the problem of regulating the naming of Orders (including subordinate suprageneric categories), Classes and Phyla: The foregoing survey of the problems involved in devising rules for the naming of Orders (including Sub-Orders and other subordinate suprageneric categories), Classes and Phyla shows that it would be perfectly practicable to lay down simple and easily operated rules in respect of most of the matters which would require to be dealt with. There would, however, be serious, though not insuperable, difficulty in devising such rules in relation to two of the problems involved, if extensive name-changing of the most objectionable character was to be avoided. The two problems are: (1) the determination, in respect of names published prior to about the middle of the nineteenth century, of the dates to be assigned to names currently adopted as Ordinal (or co-ordinate) names; (2) the method to be established for determining the "types" of taxonomic units established prior to the introduction of the proposed scheme. In these circumstances, there are, it is suggested, two alternative approaches to this problem, either of which would be practicable. Under *Alternative No. 1*, definite rules would be laid down in respect of all the problems involved; under this alternative the two problems of special difficulty would be dealt with by provisions which applied the Law of Priority to Ordinal names and to co-ordinate names of other categories and which prescribed that the "type" of any of a taxonomic unit belonging to any of these categories would be that one of the originally included units which was either so designated or indicated by the original author or was the first later to be selected as such. These two provisions would, under this Alternative, be subject, in each case, to a proviso that, where, in the opinion of specialists, the application of either or both of these provisions would lead to serious consequences through the changing of names involved, it would be open to those specialists to make application to the Commission that the normal rules be varied in the case of the name in question and it would thereupon become the duty of the Commission to decide what name should be used for the taxonomic unit concerned; it is suggested that it should be an instruction to the Commission in deciding such applications, to guide itself by the need for maintaining uniformity and promoting stability in nomenclature. It is further suggested that in such cases the Commission should be bound to give public notice of applications received in the same way as it has been suggested (in paragraph 13 above) that it should be required to do when considering applications relating to homonymy in Ordinal names and names of higher rank. Under *Alternative No. 2* the scheme would contain the same provisions as under *Alternative No. 1*, except in regard to the application of the Law of Priority and the method to be followed in determining the "types" of taxonomic units belonging to the categories with which we are here concerned. Under *Alternative No. 2* these matters would not be subject to hard and fast rules; there would, in place of such rules, be a provision in the scheme that

authorised the Commission, on the application of specialists (a) to determine the names to be accepted as valid for particular Orders, Classes and Phyla by authors who recognised those Orders, Classes and Phyla as taxonomically required, and (b) to prescribe the "type" to be accepted for the purpose of providing the units so named with an objective—and, therefore, determinate—concept. My own feeling is that of these *Alternatives*, No. 2 is greatly to be preferred to No. 1, for under it there would be no risk of undesirable disturbances in existing practice arising from the application of the rules (as might easily happen under *Alternative No. 1*), while at the same time provision would be made for the orderly stabilisation of Ordinal names and names of higher rank in those groups where the workers concerned were especially conscious of the need for an improved system for the naming of Orders and higher taxonomic categories and were anxious to secure stability for the names of units belonging to such categories in their own groups.

20. Appeal to zoologists for advice: Having now completed a survey of the problems which will have to be faced in devising any scheme for regulating the naming of taxonomic units belonging to the category Order and higher categories and having offered suggestions as to various ways by which some of these problems could be met, I commend the whole subject to zoologists for consideration and advice. It is my hope that Nomenclature Committees of Natural History Museums and similar scientific institutions will take this problem into consideration and will furnish statements of the views of their members on the various issues involved. Similar statements from individual specialists will also be extremely welcome. The subject affects workers in every branch of zoology and is of equal interest to neontologists and palaeontologists. Under the instructions given by the Paris Congress a Report on this subject, with definite recommendations must be prepared for consideration by the Copenhagen Congress in 1953, and it is particularly hoped therefore that there will be a very full and detailed response to the present appeal for advice, so that the Report which it will be my duty to prepare may be based upon whatever is found to be the solution most generally desired. If that Report is to be properly considered before the Copenhagen Congress, it ought to be published in the *Bulletin of Zoological Nomenclature* well before that Congress opens; for this purpose the Report itself ought to be completed by the autumn of 1952. It is accordingly particularly hoped that committees and individual specialists will formulate their views as quickly as is possible, so that these may reach me, as Secretary to the Commission (28, Park Village East, Regent's Park, London, N.W.1, England) not later than the end of July, 1952. Finally it is particularly asked that comments should be type-written, double-spaced on one side of the page only and should be furnished in duplicate. All signatures should be clearly typed as well as given in the writer's usual script. Every statement should be clearly marked with the Commission's Reference Number, Z.N.(S.)360.